

## REMARKS

This is intended as a supplemental response to the Final Office Action dated July 19, 2006, having a shortened statutory period for response set to expire on October 19, 2006. Please reconsider the claims pending in the application for the reasons discussed below.

Claims 1-18 remain pending in the application. Claims 1-18 are rejected. Reconsideration of the rejection of claims 10-18 is requested for reasons presented below.

Applicants propose canceling claims 1-9. Applicants submit that the changes proposed herein reduce the issues for appeal and do not introduce new matter or raise new issues. Applicants note that the Examiner indicated in the Advisory Action mailed September 19, 2006 that the proposed amendments, which were presented in the Response to the Final Office Action that was filed on September 6, 2006, would be entered upon appeal.

Claims 1-3, 5, and 7-9 are rejected under 35 U.S.C. § 102(e) as being anticipated by *Cheng, et al.* (U.S. Patent No. 6,649,538). Applicants submit that the rejection of claims 1-3, 5, and 7-9 is moot as Applicants have proposed canceling claims 1-3, 5, and 7-9.

Claims 10-12, 14, and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Cheng, et al.* in view of *Kiryu, et al.* (U.S. Publication No. 2004/0053472 A1). In the Advisory Action mailed September 19, 2006, the Examiner states that in using *Cheng, et al.*'s process of forming a silicon oxynitride film, it would have been obvious to modify the processing system of *Kiryu, et al.* to include using different chambers for each step of the process. Applicants respectfully traverse the rejection.

Applicants respectfully maintain that *Kiryu, et al.*'s description of a processing system that may include different types of processing chambers is not sufficient to provide a suggestion or motivation for forming *Cheng, et al.*'s silicon oxynitride layer in two different chambers of the system. Applicants note that the only motivation provided by the Examiner for performing *Cheng, et al.*'s method of depositing a silicon oxynitride

layer using two different chambers of *Kiryu, et al.* is to avoid contamination of the substrate, as *Kiryu, et al.* states that using the different processing chambers prevents contamination of the substrate (paragraphs [0141]-[0143]).

Paragraphs [0140]-[0141] of *Kiryu, et al.* describe a cluster tool that includes a load lock, transfer chambers, and processing chambers and is configured such that a substrate can be transferred between the processing chambers without being exposed to the atmosphere. Paragraph [0142] of *Kiryu, et al.* states “Moreover, the contamination of the object to be processed by the atmosphere is similarly prevented also when the object to be processed is transferred from the processing chamber 112 to the processing chamber 113, when the object to be processed is transferred from the processing chamber 113 to the processing chamber 114, and so on.” Applicants submit that the Examiner is misinterpreting *Kiryu, et al.*’s statement that contamination is prevented when a substrate is transferred between chambers (emphasis added by Applicants) as a teaching that it is the act of transferring a substrate between different chambers of the tool for different processing steps that prevents contamination of a substrate rather than the act of processing of a substrate within a cluster tool. Applicants further note that in view of *Kiryu, et al.*’s description (paragraphs [0008], [0143], claims 2 and 3) of the benefit of reducing the burden of manufacturing by performing multiple processes, including the deposition of a silicon oxynitride layer, in a single processing chamber apparatus of the cluster tool described therein, the combination of *Cheng, et al.* and *Kiryu, et al.* does not suggest or motivate performing *Cheng, et al.*’s method of depositing a silicon oxynitride film in the cluster tool of *Kiryu, et al.*, wherein a first chamber is used for heating the substrate in an NH<sub>3</sub> atmosphere and a second chamber is used for exposing the substrate to a plasma containing a nitrogen source.

Thus, *Cheng, et al.* in view of *Kiryu, et al.* does not teach, show, or suggest a method of forming a gate dielectric in an integrated processing system, comprising heating a structure comprising a silicon oxide film formed on a silicon substrate in an atmosphere comprising NH<sub>3</sub> in a first processing chamber of the integrated processing system to incorporate nitrogen into the silicon oxide film, transferring the structure to a second processing chamber of the integrated processing system, and then exposing the

structure to a plasma comprising a nitrogen source in the second processing chamber to form a silicon oxynitride gate dielectric on the substrate, as recited in claim 10. Applicants respectfully request withdrawal of the rejection of claim 10 and of claims 11-12, 14, and 16, which depend thereon.

Claims 4 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Cheng et al.* in view of *Kiryu, et al.* and *Niimi, et al.* (U.S. Patent No. 6,548,366 B2). Applicants submit that the rejection of claim 4 is moot as Applicants propose canceling claim 4. Applicants respectfully traverse the rejection of claim 17.

*Cheng, et al.* and *Kiryu, et al.* are discussed above. *Niimi, et al.* does not teach or suggest forming a silicon oxynitride film in two different chambers, wherein a substrate is heated in an atmosphere comprising  $\text{NH}_3$  in one chamber and then exposed to a plasma comprising a nitrogen source in another chamber. Thus, *Niimi, et al.* does not provide or suggest the elements of independent claim 10 that are not provided or suggested by *Cheng, et al.* in view of *Kiryu, et al.* Applicants respectfully request withdrawal of the rejection of claim 17, which includes the limitations of claim 10.

Claims 6 and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Cheng, et al.* in view of *Kiryu, et al.* and further in view of *Ibok* (U.S. Publication No. 2001/0049186). Applicants submit that the rejection of claim 6 is moot as Applicants propose canceling claim 6. Applicants respectfully traverse the rejection of claim 18.

*Ibok* does not teach or suggest forming a silicon oxynitride film in two different chambers, wherein a substrate is heated in an atmosphere comprising  $\text{NH}_3$  in one chamber and then exposed to a plasma comprising a nitrogen source in another chamber. Thus, *Ibok* does not provide or suggest the elements of independent claim 10 that are not provided or suggested by *Cheng, et al.* in view of *Kiryu, et al.* Applicants respectfully request withdrawal of the rejection of claim 18.

Claims 13 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Cheng et al.* in view of *Kiryu, et al.* and further in view of *Burnham et al.* (U.S. Patent No. 6,649,538 B1). Applicants respectfully traverse the rejection.

*Burnham, et al.* does not teach or suggest forming a silicon oxynitride film in two different chambers, wherein a substrate is heated in an atmosphere comprising  $\text{NH}_3$  in

one chamber and then exposed to a plasma comprising a nitrogen source in another chamber. Thus, *Burnham, et al.* does not provide or suggest the elements of independent claim 10 that are not provided or suggested by *Cheng, et al.* in view of *Kiryu, et al.* Applicants respectfully request withdrawal of the rejection of claims 13 and 15.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

Having addressed all issues set out in the Final Office Action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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